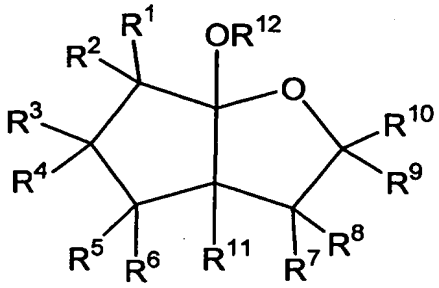
CLAIMS

1. A 2-oxabicyclo[3.3.0]octane compound of the following formula (1),



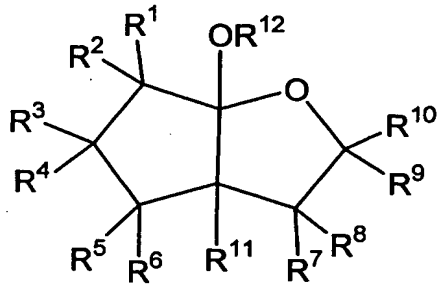
(1)

wherein R^1-R^{10} individually represent a hydrogen atom or a substituted or unsubstituted alkyl group having 1-20 carbon atoms, R^{11} represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkynyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted cycloalkenyl group, a substituted or unsubstituted aryl group, formyl group, a substituted or unsubstituted acyl group, a substituted or unsubstituted alkoxycarbonyl group, a substituted or unsubstituted alkenyloxycarbonyl group, a substituted or unsubstituted aryloxycarbonyl group, or a substituted or unsubstituted alkenyl group, and R^{12} represents a substituted or unsubstituted hydrocarbon group, provided that when R^{11} is a substituted or unsubstituted alkenyl group, R^{12} is a chiral group.

2. The compound according to claim 1, wherein R^{12} is a substituted or unsubstituted chiralic secondary hydrocarbon group.

3. The compound according to claim 1, wherein R^{12} is a chiralic secondary hydrocarbon group having a crosslinked structure or a chiralic secondary alkyl group substituted with an alkoxycarbonyl group.

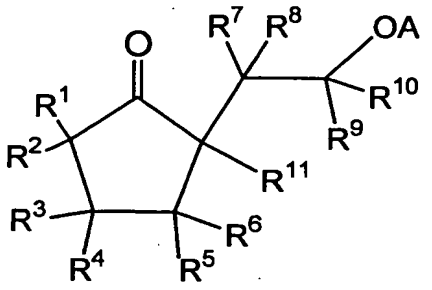
4. An optical-resolution agent comprising at least one 2-oxabicyclo[3.3.0]octane compound of the following formula (1),



(1)

wherein R^1-R^{10} individually represent a hydrogen atom or a substituted or unsubstituted alkyl group having 1-20 carbon atoms, R^{11} represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkynyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted cycloalkenyl group, a substituted or unsubstituted aryl group, formyl group, a substituted or unsubstituted acyl group, a substituted or unsubstituted alkoxycarbonyl group, a substituted or unsubstituted alkenyloxycarbonyl group, a substituted or unsubstituted aryloxycarbonyl group, or a substituted or unsubstituted alkenyl group, and R^{12} represents a substituted or unsubstituted hydrocarbon group, provided that when R^{11} is a substituted or unsubstituted alkenyl group, R^{12} is a chiral group.

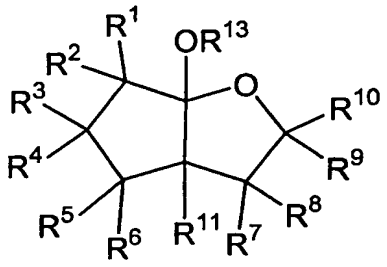
5. A process for producing a 2-oxabicyclo[3.3.0]octane compound represented by the above formula (1) comprising reacting a cyclopentanone compound of the formula (2),



(2)

wherein the R^1-R^{11} groups are the same as in the formula (1) and A is a hydrogen atom or a protective group for a hydroxyl group, with an optically active alcohol of the formula $R^{12}OH$, wherein R^{12} is the same as in the formula (1), in the presence of an acid catalyst.

6. A process for producing a 2-oxabicyclo[3.3.0]octane compound represented by the above formula (1) comprising reacting a 2-oxabicyclo[3.3.0]octane compound of the formula (3),



(3)

wherein the R^1-R^{11} groups are the same as in the formula (1) and R^{13} is a substituted or unsubstituted hydrocarbon group, with an alcohol of the formula $R^{12}OH$, wherein R^{12} is as defined above, in the presence of an acid catalyst.

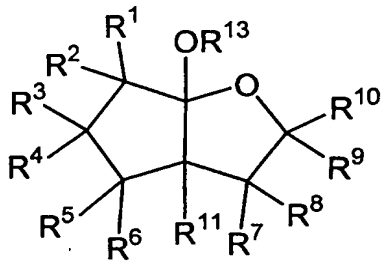
7. A method for separating a diastereomer mixture of 2-oxabicyclo [3.3.0]octane compound of the above formula (1) comprising processing the diastereomer mixture of 2-oxabicyclo [3.3.0]octane compound of the above formula (1) using a simulated moving bed chromatography to separate into individual diastereomers.

8. A method for separating a diastereomer mixture of 2-oxabicyclo [3.3.0]octane compound of the above formula (1) comprising distilling the diastereomer mixture of 2-oxabicyclo [3.3.0]octane compound of the above formula (1) to separate into individual diastereomers.

9. A method for optically resolving alcohol of the formula $R^{14}OH$, wherein R^{14} represents a substituted or unsubstituted hydrocarbon group having an asymmetric carbon atom, comprising,

a step of separating a diastereomer mixture of 2-oxabicyclo [3.3.0]octane compound of the above formula (1) described in any one of claims 1-3 into individual diastereomers,

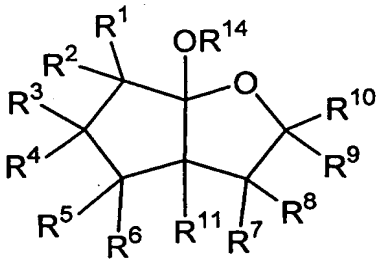
a step of reacting the separated diastereomers with an alcohol of the formula $R^{13}OH$, wherein R^{13} is a substituted or unsubstituted hydrocarbon group, in the presence of an acid catalyst to obtain a 2-oxabicyclo[3.3.0]octane compound of the formula (3),



(3)

wherein R^1-R^{11} are the same as in the formula (1) and R^{13} is as defined above,

a step of reacting the compound of the formula (3) with an optical isomer mixture of alcohol of the formula $R^{14}OH$, wherein R^{14} is as defined above, in the presence of an acid catalyst to obtain a diastereomer mixture of the formula (4),



(4)

wherein R^1-R^{11} and R^{14} are the same as defined above,

a step of separating the resulting diastereomer mixture into individual diastereomers, and

a step of reacting the separated diastereomers with an alcohol of the formula $R^{15}OH$, wherein R^{15} represents a substituted or unsubstituted hydrocarbon group, in the presence of an acid catalyst to obtain an optically active alcohol of the formula $R^{14}OH$, wherein R^{14} is as defined above.

10. The method according to claim 9, wherein the step of separating the diastereomer mixture of the compound of the above formula (4) into individual diastereomers comprises processing the diastereomer mixture using simulated moving bed chromatography to separate into individual diastereomers.

11. The method according to claim 9, wherein the step of separating the diastereomer mixture of the compound of the above formula (4) into individual diastereomers comprises distilling the diastereomer mixture to separate into individual diastereomers.

12. The method according to any one of claims 9-11, wherein the optical active alcohol of the formula $R^{14}OH$, wherein R^{14} is as defined above, and the compound of the above formula (3) are isolated by reacting the separated diastereomer of the compound of

the formula (4) with an alcohol of the formula $R^{13}OH$, wherein R^{13} is as defined above, in the presence of an acid catalyst, and the isolated compound of the formula (3) is reused as an optical resolution agent of alcohol.